

Amendments to the Claims

Claim 1-50. (cancelled)

51.(new) A method for maintaining an updated copy of a production storage element, comprising:

receiving a write small computer storage interface (SCSI) command, wherein the write SCSI command includes a new data chunk and a destination address;

saving the new data chunk and the destination address in a journal in an order determined according to a time that the write SCSI command was received; and

saving the destination address in an entry in a changes table, wherein the entry includes a pointer to a location of the new data chunk in the journal;

wherein the journal and the changes table represents the updated copy of the production storage element and includes required information for creating a snapshot volume.

52.(new) The method of claim 51, further comprising:

only upon reception of a request for creating a snapshot volume of the production storage element:

determining if the snapshot volume already exists;

if the snapshot volume does not exist:

copying a data chunk residing in a production storage element at a physical location to a location in a snapshot volume; and

copying the new data chunk from the journal to the physical location in the production storage element, wherein the location of the data chunk in the journal is determined according to a respective entry in the change table; if the snapshot volume exists:

copying the new data chunk from its location in the journal to a physical location in the production storage element, when the snapshot volume has been modified since the last time that the snapshot volume was created, wherein the location of the data chunk in the journal is determined according to a respective entry in the change table;

when the snapshot volume has not been modified since the last time that the snapshot volume was created, copying a data chunk residing in the production storage element at a physical location to a location in the snapshot storage volume; and

copying the new data chunk from the journal to the physical location in the production storage element, wherein the location of the data chunk in the journal is determined according to a respective entry in the change table.

53.(new) The method of claim 52, wherein the physical address is determined according to the destination address designated in the write SCSI command.

54.(new) The method of claim 53, wherein copying the new data chunk from its location in the journal to a physical location in the production storage element further comprising: deleting the respective entry from the changes table.

55.(new) The method of claim 51, wherein only a single I/O operation is required to maintain the updated copy required for the creation of the snapshot volume.

56. (new) A computer-readable medium having stored thereon computer executable code for maintaining an updated copy of a production storage element, comprising:

receiving a write small computer storage interface (SCSI) command, wherein the write SCSI command includes a new data chunk and a destination address;

saving the new data chunk and the destination address in a journal in an order determined according to a time that the write SCSI command was received; and

saving the destination address in an entry in a changes table, wherein the entry includes a pointer to a location of the new data chunk in the journal,

wherein the journal and the changes table represents the updated copy of the production storage element and includes required information for creating a snapshot volume.

57. (new) The computer-readable medium of claim 56, further comprising:

only upon reception of a request for creating a snapshot volume of the production storage element:

determining if the snapshot volume already exists;

if the snapshot volume does not exist:

copying a data chunk residing in a production storage element at a physical location to a location in a snapshot volume; and

copying the new data chunk from the journal to the physical location in the production storage element, wherein the location of the data chunk in the journal is determined according to a respective entry in the change table; if the snapshot volume exists:

copying the new data chunk from its location in the journal to a physical location in the production storage element, when the snapshot volume has been modified since the last time that the snapshot volume was created, wherein the location of the data chunk in the journal is determined according to a respective entry in the change table;

when the snapshot volume has not been modified since the last time that the snapshot volume was created, copying a data chunk residing in the production storage element at a physical location to a location in the snapshot volume; and

copying the new data chunk from the journal to the physical location in the production storage element, wherein the location of the data chunk in the journal is determined according to a respective entry in the change table.

58. (new) The computer-readable medium of claim 57, wherein the physical address is determined according to the destination address designated in the write SCSI command.

59. (new) The computer-readable medium of claim 58, wherein copying the new data chunk from its location in the journal to a physical location in the production storage element further comprising: deleting the respective entry from the changes table.

60.(new) The computer-readable medium of claim 56, wherein only a single I/O operation is required to maintain the updated copy required for the creation of the snapshot volume.